

Hake MSE process and progress update

JMC/MSEWG meeting

May 2019

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With contributions from Aaron Berger, Nis Jacobsen, Ian Taylor

Purpose of today

- ▶ Generate discussion and feedback from the MSE working group and JMC on:
 - ▶ Preliminary simulations presented in Feb/March
 - ▶ Latest iteration of DRAFT objectives and performance metrics
 - ▶ Plans for MSE development for this year

Outline

- ▶ Review events of the past year
- ▶ Review work plan and timeline

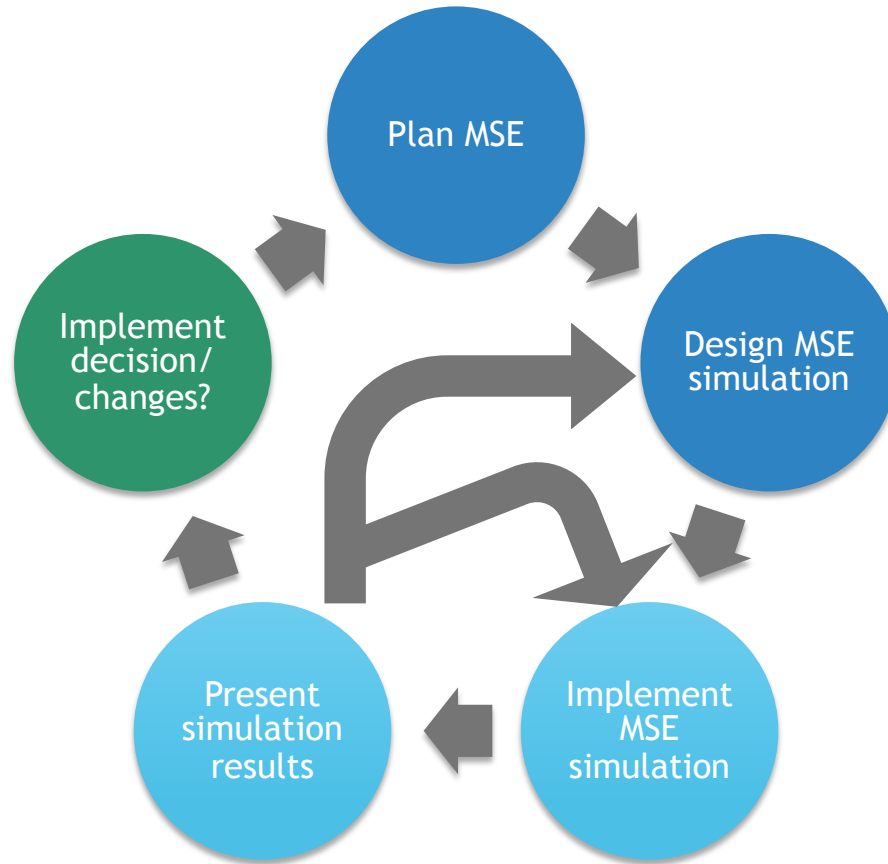
Reminder: MSE is meant to improve strategic decision making

- ▶ Testing the performance of management procedures (data collection, assessment, application of harvest strategies) over:
 - ▶ Many replicate “futures”
 - ▶ Future scenarios capturing “things we can’t control”, e.g. changes in productivity, recruitment, natural mortality, spatial distribution
 - ▶ Alternative hypotheses about how the fishery system functions
- ▶ Testing management procedures first in a virtual world, before considering implementing them in the real world is part of due diligence
- ▶ MSE is not meant to inform tactical decision-making

Events of the past year

- ▶ **February 2018:** Draft MSE work plan reviewed by SRG
- ▶ **March 2018:** Goals for the MSE articulated by JMC
- ▶ **May-June 2018:** MSE working group phone calls
 - ▶ Call #1: Specifying Objectives and Performance Metrics
 - ▶ Call #2: Generating hypotheses for MSE operating models and FATE hake project
 - ▶ Call #3: Prioritizing scenarios for the MSE
- ▶ **July 2018:** JMC meeting in Victoria focused on MSE
- ▶ **October 2018:** MSE working group phone call - progress update
- ▶ **December 2018:** JMC phone call - objectives and performance metrics
- ▶ **December 2018:** JTC meeting included update on MSE progress
- ▶ **February 2019:** Review of MSE simulation model by SRG
- ▶ **March 2019:** Preliminary simulation results shared with JMC

Review of work plan and timeline



Overview timeline for MSE tasks

	Dec-17	Mar-18	Aug-18	Dec-18	Mar-19	Aug-19	Dec-19
1) Establish Project team and workplan							
2) Set goals for this MSE iteration							
3) Review management goals and objectives							
4) Review performance metrics							
5) Review/develop management procedures							
6) Develop environmental scenarios							
7) Identify key uncertainties							
8) Develop operating models							
9) Code for simulations							
10) Paramterize operating models							
11) Develop comminication tools							
12) Simulations			Phase I		Phase II	Phase III	
13) Technical documentation							

Plan and Design I

	Dec-17	Mar-18	Aug-18	Dec-18	Mar-19	Aug-19	Dec-19
1) Establish Project team and workplan							
2) Set goals for this MSE iteration							
3) Review management goals and objectives							
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1. Establish project team and MSE Work group, roles and responsibilities, communication strategies, work plan
2. Establish goals for this iteration of the MSE (What problem are we trying to address?)
 - ▶ JMC's stated MSE goals (March 2018):
 - ▶ Evaluate the performance of current hake management procedures under alternative hypotheses about current and future environmental conditions
 - ▶ Better understand the effects of hake distribution and movement on both countries' ability to catch fish
 - ▶ Better understand how fishing in each country affects the availability of fish to the other country in future years

Plan and Design II

	Dec-17	Mar-18	Aug-18	Dec-18	Mar-19	Aug-19	Dec-19
1) Establish Project team and workplan							
2) Set goals for this MSE iteration							
3) Review management goals and objectives							
4) Review performance metrics							
5) Review/develop management procedures							
6) Develop environmental scenarios							
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9) Code for simulations							
10) Parameterize operating models							
11) Develop communication tools							
12) Simulations							
13) Technical documentation							

3. Review goals and objectives of managers with feedback from MSE working group (iterative process)
4. Review performance metrics with feedback from MSE working group (iterative process)
5. Decide/develop management procedures to test
6. Develop environmental scenarios
7. Identify other types of scenarios (?)
8. Develop operating and estimation models

6/7. Develop scenarios

Current steps include:

- ▶ Incorporate age-based movement between 2 areas

Planned steps include:

- ▶ Incorporate the findings of Mike Malick's work under the Fisheries And The Environment (FATE) project
- ▶ Modeling trends and/or regime-like patterns of variability in movement

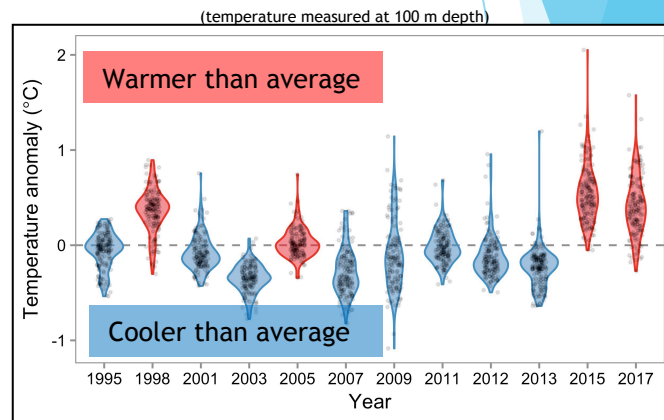
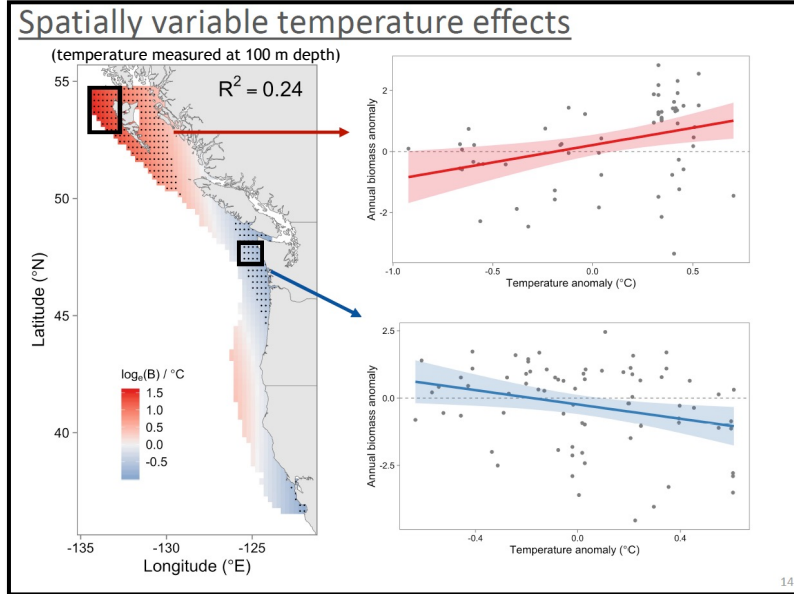


Figure from Mike Malick's talk to 2019 SRG

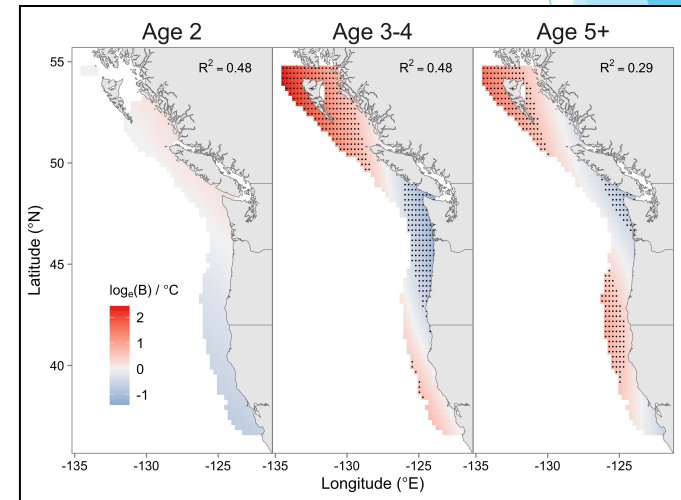
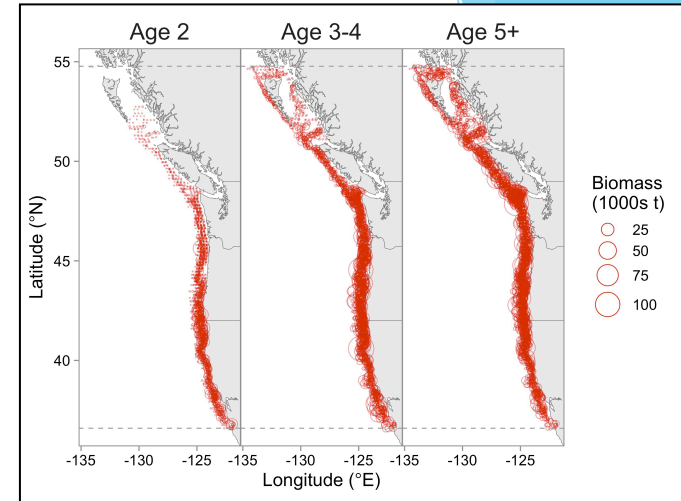
FATE project

Environmental drivers of Hake distribution



Seasonal forecasting of spatial distribution

Figures from Mike Malick's talk to 2019 SRG



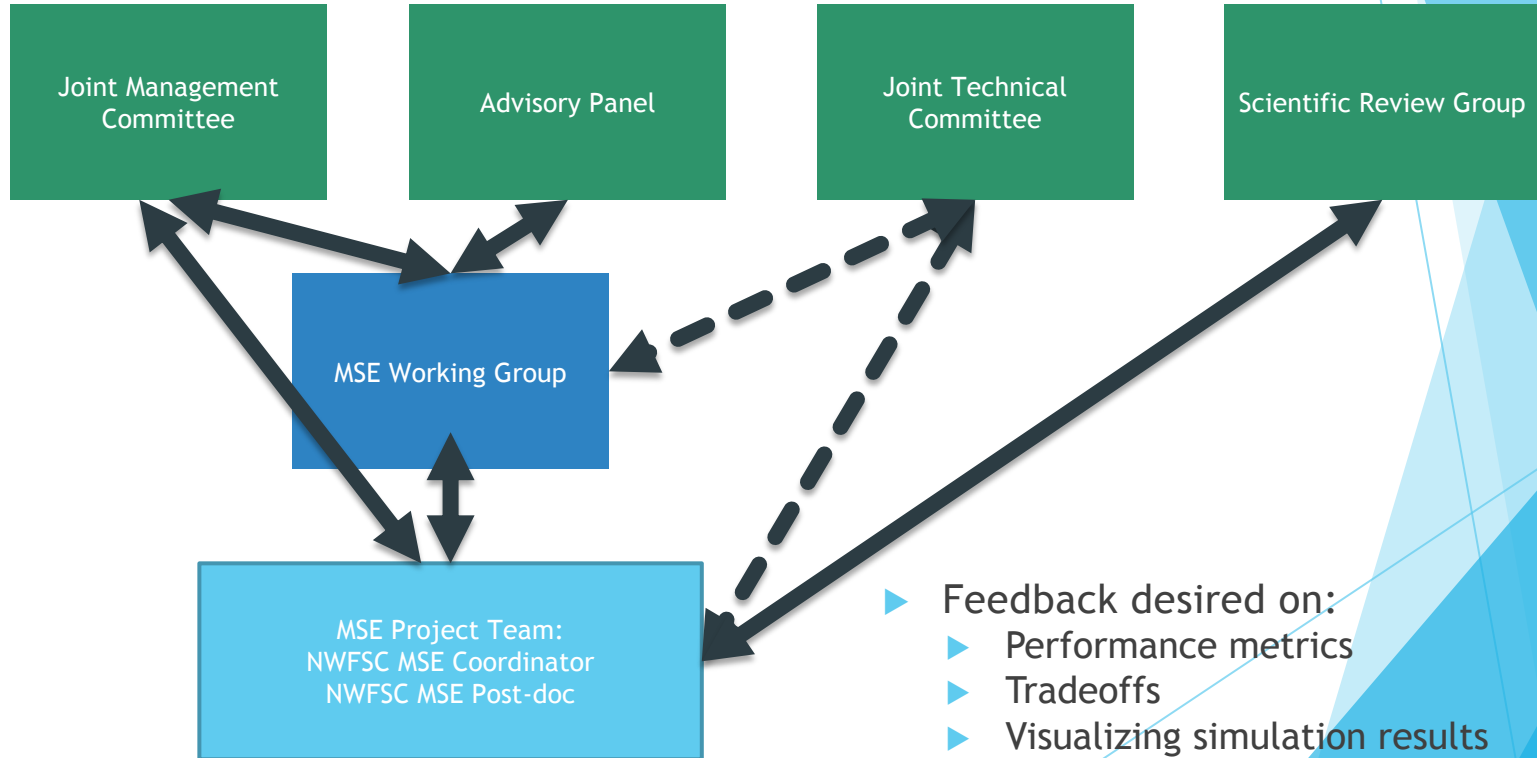
Implement MSE simulation

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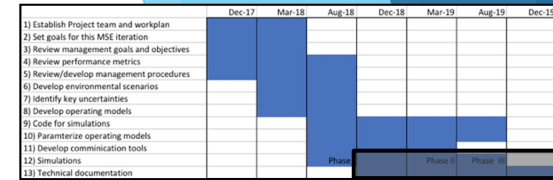
9. Develop computer code for closed loop simulation
10. Parameterize operating models
11. Develop communication tools for simulation results

11. Develop communication tools

- Communication plan - is this structure meeting the needs of management bodies and interested parties?



Provide results of MSE simulation




12. Present simulation results

► Deliverables:

- First iteration, with a single non-conditioned model -JMC summer meeting 2018
- Second iteration, with at least one conditioned model - Feb/March 2019
- Third iteration, with multiple conditioned models - Aug 2019

13. Technical documentation of results - by Dec 2019

Next steps



	Dec-17	Mar-18	Aug-18	Dec-18	Mar-19	Aug-19	Dec-19
1) Establish Project team and workplan	█	█					
2) Set goals for this MSE iteration	█	█					
3) Review management goals and objectives	█	█					
4) Review performance metrics		█	█				
5) Review/develop management procedures		█	█				
6) Develop environmental scenarios		█	█				
7) Identify key uncertainties		█	█				
8) Develop operating models			█	█	█	█	
9) Code for simulations			█	█	█	█	
10) Paramterize operating models			█	█	█	█	
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Iterative process